REMARKS

This Application has been carefully reviewed in light of the Office Action dated July 25, 2007 (*"Office Action"*). Claims 1-28 are pending in the Application, and the Examiner rejects all pending claims. Applicant amends the specification and Claims 3, 12, and 21 to correct typographical errors. Applicant respectfully requests reconsideration and favorable action in this case.

I.   Claim Rejections Under 35 U.S.C. §103

The Examiner rejects Claims 1-28 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 5,809,133 issued to Bartkowiak et al. (*"Bartkowiak"*) in view of U.S. Patent Application Publication No. 2003/0123574 issued to Simeon et al. (*"Simeon"*). Applicant respectfully traverses this rejection and submits that the *Bartkowiak-Simeon* combination does not teach or suggest each and every limitation of the claims.

Consider Applicant's independent Claim 1, which recites:

> A method for detecting a received signal comprising:
> determining a set of particles each modeling a potential signal generated by a transmitter;
> measuring a received signal from the transmitter;
> calculating a probability for each of the particles, the probability for a particle indicating likelihood of the potential signal modeled by the particle based upon the received signal;
> redistributing the particles within a space of potential signals that may be generated by the transmitter based upon the probabilities;
> selecting one of the particles based upon the distribution of the particles within the space of potential signals; and
> outputting the potential signal modeled by the selected particle.

Among other aspects, Applicant respectfully submits that *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest: (1) determining a set of particles each modeling a potential signal, (2) calculating a probability for each of the particles, and (3) redistributing the particles within a space of potential signals. Also, Applicant respectfully submits that certain dependent claims include separately patentable limitations.

Initially, Applicant notes that *Bartkowiak* describes a modified Goertzel DFT algorithm that is fundamentally different than the invention specified by Applicant's claims. Because of this fundamental difference, the rejection remains fraught with problems (as shown in the following five sections). These problems are not cured by the inclusion of *Simeon*'s tone detection method.

A.   The cited references fail to teach or suggest determining a set of particles each modeling a potential signal.

Claim 1 requires "determining a set of particles each modeling a potential signal." *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest these claimed aspects.

As teaching these claimed aspects, the *Office Action* points to *Bartkowiak*, column 3, lines 26-36. *Office Action*, p. 2. The cited portion of *Bartkowiak* states that "the DTMF detector receives a plurality of digital samples of a received signal." *Bartkowiak*, col. 3, ll. 26-27. Accordingly, Applicant assumes that the Examiner relies on: (1) *Bartkowiak*'s digital samples to teach the claimed "particles" and (2) *Bartkowiak*'s received signal to teach the claimed "potential signal."

First, even assuming, for the sake of argument, that the *Office Action* is correct, *Bartkowiak* <u>still</u> fails to disclose "determining a set of particles <u>each</u> modeling a potential signal," as Claim 1 requires. *Bartkowiak*'s digital samples may represent a received signal. However, digital samples that (when taken together) model the received signal (*see id.*) do not teach or suggest digital samples that each, <u>taken individually</u>, model a received signal. Accordingly, Applicant respectfully submits that *Bartkowiak* fails to teach or suggest, "determining a set of particles each modeling a potential signal," as required by Claim 1.

Second, Applicant respectfully submits that *Bartkowiak*'s received signal fails to teach or suggest the claimed "potential signal," as asserted by the *Office Action*. Claim 1 specifies two separate elements -- "a received signal" and "a potential signal." Moreover, Claim 1 further specifies that these are separate and distinct claimed aspects; the claim states that the probability for a particle indicates "likelihood of <u>the potential signal</u> modeled by the particle based upon <u>the received signal</u>." Accordingly, *Bartkowiak*'s received signal fails to teach or suggest the "potential signal" required by Claim 1.

For at least these two reasons, *Bartkowiak* does not teach or suggest "determining a set of particles each modeling a potential signal," as required by Claim 1. *Simeon* fails to remedy the deficiencies of *Bartkowiak*.

Applicant thus respectfully submits that *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest every element of Claim 1. Likewise, independent Claims 10, 19, and 28 include limitations that, for substantially similar reasons, are not taught

or suggested by the references. Because *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest every element of independent Claims 1, 10, 19, and 28, Applicant respectfully requests reconsideration and allowance of Claims 1, 10, 19, and 28, and their respective dependent claims.

B.   The cited references fail to teach or suggest calculating a probability for each of the particles.

Claim 1 also requires "calculating a probability for each of the particles, the probability for a particle indicating likelihood of the potential signal modeled by the particle based upon the received signal." *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest these claimed aspects.

As teaching these aspects, the *Office Action* relies on *Simeon*, paragraph 24. *Office Action*, p. 3. Generally, *Simeon* teaches a method of tone detection. *Simeon*, Abstract. In order to determine whether a signal includes a tone, a comparator examines a statistical mean of the signal. *Id.* at ¶ 23. If the value of the statistical mean is above a particular threshold, then *Simeon*'s comparator concludes that the signal includes a tone; otherwise, it concludes that the signal does not include a tone. *Id.* In the paragraph cited by the *Office Action*, *Simeon* discusses a method of determining that threshold value used by the comparator. *Id.* at ¶ 24. The threshold value is designed to maximize the probability of detection while minimizing the probability of false alarm. *Id.* at ¶ 23.

First, Applicant respectfully submits that the cited portion of *Simeon* fails to teach or suggest "the probability . . . indicating <u>likelihood of the potential signal</u> . . . based upon the received signal." While *Simeon* discusses various different probabilities and probability density functions, none of these teach or suggest a probability that indicates likelihood of a potential signal, as Claim 1 requires.

Second, Applicant respectfully submits that *Simeon* fails to teach or suggest "calculating a probability <u>for each of the particles</u>." The *Office Action* relies on *Bartkowiak*'s digital samples to teach the claimed "particles." However, the cited portion of *Simeon* fails to teach, suggest, or even mention digital samples, much less "calculating a probability for each of the [digital samples]," as would be required by Claim 1.

For at least these two reasons, *Simeon* does not teach or suggest "calculating a probability for each of the particles, the probability for a particle indicating likelihood of the

potential signal modeled by the particle based upon the received signal," as required by Claim 1. *Bartkowiak* fails to remedy the deficiencies of *Simeon*, as the Examiner appears to agree. *See Office Action*, p. 3 (noting that *Bartkowiak* does not teach these claimed aspects).

Applicant thus respectfully submits that *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest every element of Claim 1. Likewise, independent Claims 10, 19, and 28 include limitations that, for substantially similar reasons, are not taught or suggested by the references. Because *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest every element of independent Claims 1, 10, 19, and 28, Applicant respectfully requests reconsideration and allowance of Claims 1, 10, 19, and 28, and their respective dependent claims.

C.   The cited references fail to teach or suggest redistributing the particles within a space of potential signals.

Claim 1 further requires "redistributing the particles within a space of potential signals that may be generated by the transmitter based upon the probabilities." *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest these claimed aspects.

As teaching these aspects, the *Office Action* relies on *Simeon*, paragraph 25. *Office Action*, p. 3. As noted above, *Simeon* addresses determining a threshold value to be used by a comparator to determine whether a signal includes a tone. *Simeon*, ¶ 24. In this cited paragraph, *Simeon* simply notes that for a particular function "it can be shown that the distribution resembles a two-dimensional Gaussian distribution" and provides the corresponding variance.

However, this fails to teach or suggest "redistributing the particles within a space of potential signals that may be generated by the transmitter based upon the probabilities," as the claim requires. A function's distribution fails to teach or suggest redistributing anything, much less "redistributing the particles within a space of potential signals that may be generated by the transmitter based upon the probabilities," as required by Claim 1. Therefore, *Simeon* does not teach or suggest these claimed aspects. *Bartkowiak* fails to remedy the deficiencies of *Simeon*, as the Examiner appears to agree. *See Office Action*, p. 3 (noting that *Bartkowiak* does not teach these claimed aspects).

Applicant thus respectfully submits that *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest every element of Claim 1. Likewise, independent Claims 10, 19, and 28 include limitations that, for substantially similar reasons, are not taught or suggested by the references. Because *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest every element of independent Claims 1, 10, 19, and 28, Applicant respectfully requests reconsideration and allowance of Claims 1, 10, 19, and 28, and their respective dependent claims.

D. Dependent Claims 2, 11, and 20 include separately patentable limitations.

Consider, for example, dependent Claim 2, which recites:

> The method of Claim 1, further comprising performing the steps of measuring, calculating, and redistributing for a plurality of iterations, wherein over the course of the iterations, at least some of the particles converge upon a particular signal within the space of potential signals.

Applicant respectfully submits that *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest these claimed aspects.

The *Office Action*, in fact, fails to identify <u>any</u> portion of either reference that allegedly teaches these claimed aspects. *See Office Action*, pp. 2-6. Accordingly, Applicant respectfully submits that the Examiner acknowledges that these claimed aspects are not taught or suggested by the references.

Accordingly, Applicant respectfully submits that the proposed *Bartkowiak-Simeon* combination fails to teach or suggest all limitations of Claim 2. Dependent Claims 11 and 20 include limitations that, for substantially similar reasons, are not taught or suggested by the references. Because *Bartkowiak* and *Simeon*, whether taken alone or in combination, fail to teach or suggest every element of Claims 2, 11, and 20, Applicant respectfully requests reconsideration and allowance of at least Claims 2, 11, and 20.

E. Dependent Claims 3, 12, and 21 include separately patentable limitations.

Consider, for example, dependent Claim 3, which recites:

> The method of Claim 1, further comprising:
> determining that the a concentration of the particles within a particular portion of the space of potential signals exceeds a threshold concentration; and

in response to determining that the concentration exceeds the threshold concentration, selecting the one of the particles from within the particular portion of the space of potential signals

Applicant respectfully submits that *Bartkowiak* and *Simeon,* whether taken alone or in combination, fail to teach or suggest these claimed aspects.

The *Office Action,* in fact, fails to identify <u>any</u> portion of either reference that allegedly teaches these claimed aspects. *See Office Action,* pp. 2-6. Accordingly, Applicant respectfully submits that the Examiner acknowledges that these claimed aspects are not taught or suggested by the references.

Accordingly, Applicant respectfully submits that the proposed *Bartkowiak-Simeon* combination fails to teach or suggest all limitations of Claim 3. Dependent Claims 12 and 21 include limitations that, for substantially similar reasons, are not taught or suggested by the references. Because *Bartkowiak* and *Simeon,* whether taken alone or in combination, fail to teach or suggest every element of Claims 3, 12, and 21, Applicant respectfully requests reconsideration and allowance of at least Claims 3, 12, and 21.

Moreover, while not expressly discussed, other dependent claims provide further patentable limitations. Applicant respectfully requests reconsideration of these limitations and allowance of the claims.

CONCLUSION

Applicant has made an earnest attempt to place the Application in condition for allowance. For the foregoing reasons, and for other reasons clearly apparent, Applicant respectfully requests full allowance of all pending claims. If the Examiner feels that a telephone conference or an interview would advance prosecution of the Application in any manner, the undersigned attorney for Applicant stands ready to conduct such a conference at the convenience of the Examiner.

Although no fees are believed to be currently due, the Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of BAKER BOTTS L.L.P.

Respectfully submitted,

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